Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Canceled).

2. (Previously Presented) The apparatus of claim 64 further comprising one or more multi-slot cooling stations disposed within the transfer area.

3. (Previously Presented) The apparatus of claim 64 further comprising a vacuum pump in fluid communication with the transfer area.

4. (Previously Presented) The apparatus of claim 64 wherein a vacuum pump is in fluid communication with each of the second plurality of chambers.

5. (Previously Presented) The apparatus of claim 64 wherein each of the second plurality of chambers has two isolated processing regions.

6. (Previously Presented) The apparatus of claim 5 wherein each isolated processing region includes a gas distribution assembly disposed therein and each gas distribution assembly shares process gases from one or more gas sources.

7. (Previously Presented) The apparatus of claim 5 further comprising a remote plasma system having an RF generator connected to each individual processing region.

8. (Previously Presented) The apparatus of claim 5 wherein a remote plasma system is in fluid communication with each individual processing region.

9. (Canceled).

10. (Previously Presented) The apparatus of claim 64 wherein the high pressure processing module comprises at least one substrate stripping chambers.

11. (Previously Presented) The apparatus of claim 64 wherein the transfer area comprises a loadlock chamber.

12. (Canceled).

13. (Previously Presented) The apparatus of claim 66 wherein the high pressure processing module comprises:

(a) one or more substrate spinner chambers;

(b) one or more substrate curing chambers; and

(c) one or more silylation deposition chambers.

14. (Previously Presented) The apparatus of claim 67 further comprising one or more multi-slot cooling stations disposed within the second loadlock chamber.

15. (Previously Presented) The apparatus of claim 66 further comprising a vacuum pump in fluid communication with the multi-slot pre-heating module.

16. (Previously Presented) The apparatus of claim 66 wherein a vacuum pump is in fluid communication with each of the second plurality of chambers.

17. (Previously Presented) The apparatus of claim 16 wherein each of the second plurality of chambers has two isolated processing regions.

18. (Previously Presented) The apparatus of claim 17 wherein each isolated processing region includes a gas distribution assembly disposed therein and each gas distribution assembly shares process gases from one or more gas sources.

19. (Previously Presented) The apparatus of claim 17 further comprising a remote plasma system having a RF generator connected to each isolated processing region.

20. (Previously Presented) The apparatus of claim 66 wherein each substrate stripping chamber is an oxidation chamber.

21. (Previously Presented) The apparatus of claim 20 wherein each oxidation chamber is connected to a remote plasma system having a RF generator or a microwave generator.

22. (Previously Presented) The apparatus of claim 66 wherein the multi-slot pre-heating module is disposed within a second loadlock chamber.

23. (Withdrawn) A process for forming a mesoporous oxide film on a substrate, comprising:

a) forming a sol gel precursor comprising a silicon/oxygen compound, an organic solvent, water, and a surfactant;

b) depositing the sol gel precursor on the substrate;

c) curing the deposited sol gel precursor to form an oxide film; and

d) exposing the film to an oxidizing environment to form a mesoporous oxide film.

24. (Withdrawn) The process of claim 23, wherein the mesoporous oxide film comprises a structure of interconnected pores of uniform diameter.

25. (Withdrawn) The process of claim 24, wherein the mesoporous oxide film further comprises a cubic phase structure.

26. (Withdrawn) The process of claim 23, wherein the silicon/oxygen compound precursor is selected from the group consisting of tetraethylorthosililate, tetramethoxy silane, phenyltriethyloxy silane, methyltriethoxy silane, and combinations thereof.

27. (Withdrawn) The process of claim 23, wherein the organic solvent is selected from the group consisting of ethanol, isopropanol, n-propanol, n-butanol, sec-butanol, t-butanol, ethylene glycol and combinations thereof.

28. (Withdrawn) The process of claim 23, wherein the surfactant is a non-ionic surfactant selected from the group consisting of polyoxyethylene oxides-propylene oxide-polyethylene oxide triblock copolymers, octaethylene glycol monodecyl ether, octaethylene glycol monohexadecyl ether, and combinations thereof.

29. (Withdrawn) The process of claim 23, further comprising adding an acid or base catalyst to the sol gel precursor prior to deposition of the sol gel precursor.

30. (Withdrawn) The process of claim 23, wherein the oxidizing environment is a plasma comprising a reactive oxygen species.

31. (Withdrawn) The process of claim 30, wherein the reactive oxygen species is ozone.

32. (Withdrawn) The process of claim 23, wherein the oxidizing environment is maintained at a temperature between about 200°C to about 400°C.

33. (Withdrawn) The process of claim 23, wherein the oxide film is exposed to the oxidizing environment for about 30 to about 300 seconds .

34. (Withdrawn) The process of claim 23, wherein the mesoporous oxide film exhibits a dielectric constant between about 1.6 and about 2.2.

35. (Withdrawn) The process of claim 23, wherein the mesoporous oxide film has a porosity of at least 50%.

36. (Withdrawn) The process of claim 23, wherein the mesoporous oxide film is cured at a temperature between about 50°C to about 450°C.

37. (Withdrawn) The process of claim 34, wherein the mesoporous oxide film is cured between about 1 minute to about 10 minutes.

38. (Withdrawn) The process of claim 23, further comprising silylating the mesoporous oxide film to render the mesoporous oxide film hydrophobic.

39. (Withdrawn) The process of claim 38, wherein the silylating the mesoporous oxide film is performed by a slylating agent selected from the group consisting of tetramethyl disilazane (TMDS), hexamethyl disilazane (HMDS), dimethylaminotrimethyl silane, and combinations thereof.

40. (Withdrawn) The process of claim 39, wherein the silylation process is performed at a temperature between about 25°C to 200°C.

41. (Withdrawn) The process of claim 40, further comprising depositing a capping layer on the mesoporous oxide film.

42. (Withdrawn) The process of claim 41, wherein the capping layer is comprised of materials selected from the group consisting of silicon nitride, silicon dioxide, silicon oxynitride, amorphous silicon carbide, and combinations thereof.

43. (Withdrawn) A process for forming a mesoporous oxide film on a substrate, comprising:

a) introducing a substrate into a chamber;

b) depositing a sol gel precursor on the substrate to form an oxide film, the sol gel precursor comprising a silicon/oxygen compound, an organic solvent, water, and a surfactant; and

c) removing the organic solvent, water, and the surfactant from the oxide film by heating the film at a temperature of about 200°C to about 450°C in an inert atmosphere to form a mesoporous oxide film.

44. (Withdrawn) The process of claim 43, wherein the mesoporous oxide film comprises a structure of interconnected pores of uniform diameter.

45. (Withdrawn) The process of claim 44, wherein the mesoporous oxide film further comprises a cubic phase structure.

46. (Withdrawn) The process of claim 43, wherein the silicon/oxygen compound precursor is selected from the group consisting of tetraethylorthosililate, tetramethoxy silane, phenyltriethyloxy silane, methyltriethoxy silane, and combinations thereof.

47. (Withdrawn) The process of claim 43, wherein the organic solvent is selected from the group consisting of ethanol, isopropanol, n-propanol, n-butanol, sec-butanol, t-butanol, ethylene glycol and combinations thereof.

48. (Withdrawn) The process of claim 43, wherein the surfactant is a non-ionic surfactant selected from the group consisting of polyoxyethylene oxides-propylene oxide-

polyethylene oxide triblock copolymers, octaethylene glycol monodecyl ether, octaethylene glycol monohexadecyl ether, and combinations thereof.

49. (Withdrawn) The process of claim 43, further comprising adding an acid or base catalyst to the sol gel precursor prior to deposition of the sol gel precursor.

50. (Withdrawn) The process of claim 43, wherein the inert atmosphere comprises a non-reactive gas selected from the group consisting of nitrogen, helium, argon, and combinations thereof.

51. (Withdrawn) The process of claim 43, wherein the mesoporous oxide film is formed by annealing the oxide film at a temperature between about 400°C to about 450°C.

52. (Withdrawn) The process of claim 43, wherein the mesoporous oxide film is annealed for about 30 to about 300 seconds.

53. (Withdrawn) The process of claim 43, wherein the mesoporous oxide film exhibits a dielectric constant between about 1.6 and about 2.2.

54. (Withdrawn) The process of claim 43, wherein the atmosphere comprises an oxidizing environment of reactive oxygen species.

55. (Withdrawn) The process of claim 54, wherein the oxidizing environment is maintained at a temperature between about 200°C to about 400°C.

56. (Withdrawn) The process of claim 55, wherein the oxide film is exposed to the oxidizing environment for about 30 to about 300 seconds.

57. (Withdrawn) The process of claim 43, further comprising silylating the mesoporous oxide to render the film hydrophobic.

58. (Withdrawn) The process of claim 43, wherein the silylation process is performed with a slylating agent selected from the group consisting of tetra-methyl-di-silazane (TMDS), hexamethyl disilazane (HMDS), deimethylaminotrimethyl silane, and combinations thereof.

59. (Withdrawn) The process of claim 43, wherein the silylation process is performed at a temperature between about 25°C to 200°C.

60. (Withdrawn) The process of claim 43, further comprising depositing a capping layer on the mesoporous oxide film.

61. (Withdrawn) The process of claim 60, wherein the capping layer is comprised of materials selected from the group consisting of silicon nitride, silicon dioxide, silicon oxynitride, amorphous silicon carbide, and combinations thereof.

62. (Previously Presented) The apparatus of claim 64 wherein an isolated processing region of each of said second plurality of chambers and an interior region of said high pressure deposition module are isolatable from an exterior environment in which said apparatus is situated.

63. (Previously Presented) The apparatus of claim 66 wherein an isolated processing region of each of said second plurality of chambers and an interior region of said high pressure deposition module are isolatable from an exterior environment in which said apparatus is situated.

64. (Previously Presented) An apparatus for processing substrates, the apparatus comprising:

a staged high pressure processing module including a first plurality substrate processing chambers, a first transfer chamber that enables access to each of the first plurality of substrate processing chambers, and a first substrate handling member disposed in the first transfer chamber and configured to transfer substrates into and out of any of said first plurality of substrate processing chambers; wherein each of the first plurality of substrate processing chambers is dedicated to perform at least one step associated with the formation of a porous dielectric film from a liquid precursor including at least one liquid precursor deposition chamber, and one or more substrate stripping chambers, the one or more stripping chambers in communication with a vacuum system and configured to be evacuated to near vacuum conditions;

a low pressure processing module including a second plurality substrate processing chambers, a second transfer chamber that enables access to each of the second plurality of substrate processing chambers, and a second substrate handling member disposed in the second transfer chamber and configured to transfer substrates into and out of any of said second plurality of substrate processing chambers; wherein the second plurality of substrate processing chambers includes at least one chemical vapor deposition chamber;

a loadlock chamber operatively coupled to the low pressure processing module to enable transfer of substrates between the apparatus and a clean room; and

a transfer area that enables substrates to be transferred between the high pressure processing module and the low pressure processing module.

65. (Previously Presented) The apparatus of claim 64 wherein the at least one liquid precursor deposition chamber comprises a spin-on deposition chamber.

66. (Previously Presented) An apparatus for processing substrates, the apparatus comprising:

a staged high pressure processing module including a first plurality of substrate processing chambers, a first transfer chamber that enables access to each of the first plurality of substrate processing chambers, and a first substrate handling member disposed in the first transfer chamber and configured to transfer substrates into and out of any of said first plurality of substrate processing chambers, said first plurality of substrate processing chambers including one or more substrate stripping chambers, the one or more stripping chambers in communication with a vacuum system and configured to be evacuated to near vacuum conditions;

a low pressure processing module including a second plurality substrate processing chambers, a second transfer chamber that enables access to each of the second plurality of substrate processing chambers, and a second substrate handling member disposed in the second transfer chamber and configured to transfer substrates into and out of any of said second plurality of substrate processing chambers;

a loadlock chamber operatively coupled to the high pressure processing module to enable transfer of substrates between the apparatus and a clean room; and

a multi-slot substrate pre-heating module coupled between the high pressure and low pressure processing modules, the multi-slot substrate pre-heating module being accessible by both the first and second substrate handling members.

67. (Previously Presented) The apparatus of claim 66 wherein the multi-slot substrate pre-heating module is part of a second loadlock chamber.

68. (Previously Presented) The apparatus of claim 66 wherein the multi-slot substrate pre-heating module comprises:

a housing including an opening;

a first compartment capable of supporting a first plurality of substrates, the first compartment being operatively coupled to a first moveable shaft; and

a substrate transfer region where substrates can be transferred into or out of the first compartment of the pre-heating module through the opening in the housing;

wherein the first compartment is moveable within the housing to expose an interior section of the compartment to the opening.

69. (Previously Presented) The apparatus of claim 68 wherein the first compartment is moveable between a substrate loading/unloading position that exposes an interior section of the first compartment to the opening and an isolation position where the compartment is isolated from the atmosphere in the substrate transfer region.

70. (Previously Presented) The apparatus of claim 69 wherein the multi-slot substrate pre-heating module further comprises first and second sealing flanges disposed peripherally within and extending inward from the housing and wherein the first compartment comprises a bottom platform, a top platform and a support that supports the platforms in a spaced relationship and wherein when the first compartment is in the isolation position the top platform engages the first sealing flange and the bottom platform engages the second sealing flange.

71. (Previously Presented) The apparatus of claim 69 wherein the multi-slot substrate pre-heating module further comprises a second compartment capable of supporting a second plurality of substrates, the second compartment being operatively coupled to a second

moveable shaft so that it is moveable within the housing to expose an interior section of the compartment to the opening.

72. (Previously Presented) The apparatus of claim 71 wherein the second compartment is moveable between a substrate loading/unloading position that exposes an interior section of the second compartment to the opening and an isolation position where the second compartment is isolated from the atmosphere in the substrate transfer region.

73. (Previously Presented) The apparatus of claim 72 wherein the multi-slot substrate pre-heating module further comprises first, second, third and fourth sealing flanges disposed peripherally within and extending inward from the housing;

wherein the first compartment comprises a first bottom platform, a first top platform and a first support that supports the platforms in a spaced relationship and wherein when the first compartment is in the isolation position the first top platform engages the first sealing flange and the first bottom platform engages the second sealing flange; and

wherein the second compartment comprises a second bottom platform, a second top platform and a second support that supports the platforms in a spaced relationship and wherein when the second compartment is in the isolation position the second top platform engages the third sealing flange and the second bottom platform engages the fourth sealing flange.

74. (Previously Presented) The apparatus of claim 71 wherein, when each of the first and second compartments are positioned in the isolation position, the compartments are spaced apart from each other in a vertical relationship and the transfer region is located between the compartments.